

CLAIMS

1. A pulley fixing apparatus for an image forming apparatus including a frame, a driving motor, and a power-transmitting belt driven by the driving motor and a driving pulley, the pulley fixing apparatus comprising:

a pulley fixing part rotatably fixing a driven pulley on the frame;

a sliding part movably supporting the pulley fixing part on the frame; and

an automatic tension adjusting part disposed between the pulley fixing part and the frame to elastically bias the pulley fixing part in a first direction and impart a predetermined tension to the power-transmitting belt.

2. The apparatus according to claim 1, wherein the pulley fixing part comprises:

a plate member having a driven pulley support supporting the driven pulley and exposing a circumference surface of the driven pulley that contacts the power-transmitting belt to ease installation and removal of the power-transmitting belt.

3. The apparatus according to claim 1, wherein:

the sliding part comprises a slide protrusion positioned at the pulley fixing part; and

the frame has a protrusion guide hole positioned to receive and guide the slide protrusion.

4. The apparatus according to claim 1, wherein:

the sliding part comprises first, second, third, and fourth slide protrusions positioned at the pulley fixing part; and

the frame has corresponding first, second, third, and fourth protrusion guide holes positioned to receive and guide the respective slide protrusions.

5. The apparatus according to claim 3, wherein:

the protrusion guide hole has a length such that when the power-transmitting belt is not installed, the pulley fixing part is movable between a spring assembling position and an initial pulley fixing part-assembling position.

6. The apparatus according to claim 5, wherein:

a length range of the power-transmitting belt is defined along the first direction from the driving pulley;

the spring assembling position is beyond the length range of the power-transmitting belt; and

the initial pulley fixing part-assembling position is within the length range of the power transmitting belt.

7. The apparatus according to claim 6, wherein:

a power-transmitting belt assembling position of the pulley fixing part is located between the length of range of the power-transmitting belt and the initial pulley fixing part-assembling position

8. The apparatus according to claim 6, wherein:

a tension adjusting position of the pulley fixing part is located between the spring assembling position and the initial pulley fixing part-assembling position, within the length range of the power-transmitting belt.

9. The apparatus according to claim 3, wherein:

the slide protrusion comprises a projection having a support portion and a sliding end; and

the protrusion guide hole comprises a wide hole portion receiving the sliding end, and a narrow hole portion receiving and guiding the support portion.

10. The apparatus according to claim 9, wherein:

the support portion protrudes approximately perpendicularly from the pulley fixing part; the sliding end protrudes approximately perpendicularly from the support portion; and the protrusion guide hole is approximately L-shaped.

11. The apparatus according to claim 9, wherein the slide protrusion further comprises:

a stopper preventing the sliding end from freely passing through the wide hole portion after the sliding part is movably supported on the frame.

12. The apparatus according to claim 11, wherein the stopper comprises:

an L-shaped recess positioned at the sliding end to engage a sidewall of the wide hole portion and a rear surface of the frame in a vicinity of the sidewall of the wide hole portion.

13. The apparatus according to claim 1, wherein:
the pulley fixing part comprises a first fixing portion;
the frame comprises a second fixing portion; and
the automatic tension adjusting part comprises an elastic spring having one end fixed at the first fixing portion and an other end fixed at the second fixing portion.
14. The apparatus according to claim 13, wherein:
the first fixing portion comprises a first hook positioned at the one end of the elastic spring, and a first fixing protrusion to fix the first hook positioned at the pulley fixing part; and
the second fixing portion comprises a second hook positioned at the other end of the elastic spring, and a second fixing protrusion to fix the second hook positioned at the frame to protrude through a penetrated hole positioned at the pulley fixing part.
15. The apparatus according to claim 13, wherein the automatic tension adjusting part further comprises:
an anti-release portion to prevent the pulley fixing part from being released from the frame by an external force of predetermined magnitude.
16. The apparatus according to claim 15, wherein:
the anti-release portion does not include a separate fixing part.
17. The apparatus according to claim 1, wherein the image forming apparatus is an inkjet printer, wherein:
the power-transmitting belt comprises a power-transmitting belt transmitting a driving force to a feed roller in the inkjet printer;
the driving motor comprises a feed roller driving motor in the inkjet printer; and
the driven pulley comprises a power-transmitting pulley, transmitting the driving force of the feed roller driving motor through the power-transmitting belt.
18. The apparatus according to claim 1, wherein the image forming apparatus is an inkjet printer, wherein:

the power-transmitting belt comprises a carrier belt transmitting a driving force to a print head of the inkjet printer;

the driving motor comprises a carrier driving motor of the inkjet printer; and

the driven pulley transmits the driving force of the carrier driving motor through the carrier transfer belt.

19. The apparatus according to claim 1, further comprising:

a locking part to lock the pulley fixing part after the tension of the power-transmitting belt installed on the driven pulley is adjusted.

20. The apparatus according to claim 19, wherein the locking part comprises:

an elongated adjusting-guide with a long axis oriented at the pulley fixing part along the direction in which the pulley fixing part is elastically urged;

a threaded hole positioned at the frame to correspond to the elongated adjusting-guide hole; and

a locking screw engaging the threaded hole through the elongated adjusting-guide hole.

21. The apparatus according to claim 20, wherein the locking part further comprises:

an anti-push portion to prevent the pulley fixing part from being pushed by the driving force of the power-transmitting belt.

22. The apparatus according to claim 21, wherein the anti-push portion comprises:

at least one projection positioned at the frame in the vicinity of the threaded hole.

23. The apparatus according to claim 22, wherein the projection comprises:

a protrusion portion positioned by press machining to protrude toward the pulley fixing part.

24. The apparatus according to claim 23, wherein the projection comprises:

a burr positioned around a hole created by press machining, to protrude toward the pulley fixing part.